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Description

IONIZATION DEVICE USING MAGNETIC FORCE AND FAR INFRARED

Technical Field

[1] The present invention relates to an ionization device using magnetic force and far infrared, and more particularly, to an ionization device using magnetic force and far infrared, for which the magnetic flux density of a magnet is amplified and at the same time far infrared is activated.

Background Art

[2] Ionization of a liquid with magnetic force is activated, and such ionization is achieved by amplifying the magnetic flux density, which has been disclosed in Korean Patent No. 181748 entitled "amplification device of magnetic flux density". That is, the amplification device of a magnetic flux density can be employed for devices which activates a liquid fuel or gas fuel which is used for agricultural or industrial mechanism, a variety of vehicles, combustion devices, etc. Also, the device is used for activating water, spring water and water drainage which are widely used for household purposes or in agriculture and fisheries, and for activating gas, liquid materials, etc., for use in processes of manufacturing chemical products, medicaments, foodstuffs, etc.

[3] What effectively utilizes the combined action of the amplified magnetic force of the magnet and far infrared radiated from a ceramic is to cause the separation phenomenon of an ion in a molecular state of a fluid, and then to activate the ion. Such ionization action can reduce a chlorine component or odor in various gases and liquid fuels, or harmful substances of an exhaust gas.

[4] The above device of the magnetic flux density can prevent environmental pollution and effectively improve fuel ratios, and also activate various water to thus provide the improvement of water quality, purification, acceleration of growing vegetables and animals, or to preserve human health. Also, the device activates gases or liquid in manufacturing chemical products, medicaments or foodstuffs, and contributes to accelerating the response, mixing and ripening of materials such as gases or liquid.

[5] In other words, a composition molecule of a fluid is excited, and magnetic inductive energy (and far infrared energy) is applied to the excited fluid. A combination of the fluid composition molecule is separated into hyperfine particles to increase the supply amount of oxygen, and then obtains the activated fluid having full reactivity.

Disclosure of Invention

Technical Problem

[6] The activation device predetermines the magnetic flux density to be required, and

magnetic configuration to a certain material is possibly made according to a predetermined magnetic flux density. And, as a way of amplifying the magnetic flux density of the magnet, a plurality of permanent magnets are stacked up in an axial direction to form the magnetic field of attraction or repelling between magnets, to thereby generally improve the magnetic flux density.

[7] The device includes a plurality of magnets, a separation member which is spaced at a predetermined interval between the magnets, and a casing containing the magnets and the separation member. The separation member has a function of properly interrupting the magnetic force with diamagnetic material or non-magnetic material. The construction of forming a clearance by inserting the separation member between the magnets, and of connecting a plurality of magnets inside the casing composed of a magnetic material provides the amplification effect of the magnetic flux density.

[8] In general, it is difficult to provide an amplification device or fluid activation device which completely achieves the activation of a fluid by just stacking up a plurality of magnets purchased at a low price.

[9] Recently, there has been noted far infrared as fluid activation means, and it should enable the magnetic force and far infrared to be applied to a fluid at the same time at a low price. Particularly, in the case that such amplification structure of the magnetic flux forms a fluid flux space therein and is composed of a bundle of copper wires having a predetermined thickness, a magnetic field is simply obtained to thereby enable the amplification of the magnetic flux density.

[10] Such simplified assembly or installation works also require an assembly structure which can be carried out by those of ordinary skilled in the art.

Technical Solution

[11] To solve the above problems, it is an object of the present invention to provide an improved ionization device using magnetic force and far infrared, compared with the conventional amplification device.

[12] In other words, the ionization device of the present invention forms an induction member in the form of coils and a fluid flux space, and includes a magnetic material, far infrared emission members and inductive conduction pieces so as to obtain weak magnetic force and weak far infrared, and then forms a magnetic field. Therefore, in the fluid flow space of the magnetic flux amplification member in the ionization device, the amplification of the magnetic force and far infrared is performed, and then a certain ionization of the fluid is obtainable since the fluid has passed through the center of or around the fluid flow space.

Advantageous Effects

[13] As described above, the present invention provides an improved ionization device

using magnetic force and far infrared which amplifies the magnetic flux density.

[14] The ionization device of the present invention forms an induction member in the form of coils and a fluid flux space, and includes a magnetic material, far infrared emission members and inductive conduction pieces so as to obtain weak magnetic force and weak far infrared, and then forms a magnetic field. Therefore, in the fluid flow space of the magnetic flux amplification member in the ionization device, the amplification of the magnetic force and far infrared is performed, and then a certain ionization of the fluid is obtainable since the fluid has passed through the center of or around the fluid flow space. Therefore, an amplification device, activation device or ionization device having the above structure can be provided.

[15] Also, the present invention provides an amplification device having a simplified structure of the magnetic flux amplification which can be manufactured at a low price, together with the efficiency of the far infrared.

[16] If the amplification, control and interruption of the magnetic flux density as described in the following embodiments are applied to a power supplier in an electrolyte mode such as a storage battery, stable power supply is performed and the storage battery is maintained long in a use period. Ion-activated magnetization water which is obtained by passing through the ionization device further includes more healthful minerals than non-ionized water. Also, ion activation allows water molecule to be smaller. Therefore, when the water is applied for use in drinking, the water heightens the absorption of minerals and can be in substitution for chemical substances such as sterilizing agent, disinfectant, cleaner, detergent, etc. Also, if the water is applied in various industrial fields, many polluted materials therefrom can be reduced as general ion water. In the case that the water is used for warm water for heating, the water tube is not incrusted with slime, and thus it enhances use efficiency to thereby economize fuel. Particularly, if the water is used in a closed room having little oxygen, low oxygen phenomenon can be diminished. Also, the fuel is activated through the ion separation within a liquid fuel to greatly improve the efficiency of combustion.

Brief Description of the Drawings

[17] The above object and advantages of the present invention will become more ap parent by describing the preferred embodiments thereof in detail with reference to the accompanying drawings in which:

[18] FIG. 1 is a perspective view of an ionization device using magnetic force and far infrared according to the first embodiment of the present invention;

[19] FIG. 2 is an exploded perspective view of FIG. 1 in the ionization device according to the present invention;

[20] FIG. 3 is an exploded perspective view of a magnetic amplification member in FIG.

2;

[21] FIG. 4 is a cross-sectional view of an ionization device using magnetic force and far infrared according to the first embodiment of the present invention;

[22] FIG. 5 is a perspective view of an ionization device using magnetic force and far infrared according to the second embodiment of the present invention;

[23] FIG. 6 is an exploded perspective view showing an ionization device of FIG. 5 according to the present invention;

[24] FIG. 7 is a cross-sectional view showing an ionization device of FIG. 6 according to the second embodiment of the present invention;

[25] FIG. 8 is a perspective view of an ionization device using magnetic force and far infrared according to the third embodiment of the present invention;

[26] FIG. 9 is an exploded perspective view showing an ionization device of FIG. 8 according to the third embodiment of the present invention;

[27] FIG. 10 is a separated perspective view showing an amplification member applied to the third embodiment of the present invention; and

[28] FIG. 11 is a cross-sectional view showing an ionization device according to the third embodiment of the present invention.

Best Mode for Carrying Out the Invention

[29] To accomplish the above object of the present invention, there is provided the first aspect of an improved ionization device using magnetic force and far infrared, comprising :

[30] a casing in which a containing space is formed; a magnetic material, disposed in the middle of the casing, on the center of which magnets of a certain gauss are attached to distribute a magnetic force; a magnetic flux density control plate composed of a diamagnetic material for covering upper and lower portions of the magnetic material so as to distribute a magnetic flux density of the magnets through the magnetic material; a lateral magnetic amplification member which is tightly winded with a plurality copper wires and disposed at the outer side of the magnetic flux density control plate, for amplifying and inducing the magnetic flux of the magnetic flux density control plate laterally, in which a fluid flux space is formed; upper and lower magnetic amplification members which are winded with a plurality of copper wires and disposed at the magnetic amplification member up and down, for amplifying and inducing the magnetic flux of the magnetic flux density control plate upward and downward; far infrared emission members, incorporated in the fluid flux space of the magnetic amplification member so that the far infrared is induced together with the amplified magnetic flux density in the magnetic flux within the space of the magnetic amplification member; inductive conduction pieces, incorporated in the fluid flux space of

the magnetic amplification member so that the magnetic force in the magnetic flux within the space of the magnetic amplification member are induced and re-amplified; and a lid for covering the magnetic material, magnetic flux density control plate, magnetic amplification member, far infrared emission members and inductive c onduction pieces.

[31] There is provided the second aspect of an ionization device using magnetic force and far infrared, comprising:

[32] a cylindrical casing, at the ends of which extensions are formed, including upper and lower throughholes formed at the ends of the extensions and a containing space formed therein;

[33] a first activation portion, including a magnetic material disposed in the middle of the cylindrical casing, on the center of which magnets of a certain gauss are attached to distribute a magnetic force, a magnetic flux density control plate composed of a diamagnetic material for covering upper and lower portions of the magnetic material so as to distribute a magnetic flux density of the magnets through the magnetic material, lateral, upper and lower magnetic amplification members which are tightly winded with a plurality copper wires and disposed at the outer sides of the magnetic flux density control plate, for amplifying and inducing the magnetic flux of the magnetic flux density control plate, in which a fluid flux space is formed, far infrared emission members and inductive conduction pieces, incorporated in the fluid flux space of the magnetic amplification member so that the far infrared is induced together with the amplified magnetic flux density in the magnetic flux within the fluid flux space of the magnetic amplification member;

[34] a plurality of amplification members which surrounds the exterior of the first activation portion;

[35] a second activation portion, including a magnetic material whish is in the form of folded multi-layers, on the center of which magnets are attached, a magnetic flux density control plate which covers one side of the magnetic material, magnetic amplification members which are tightly winded with a plurality copper wires and include a predetermined space therein, so as to amplify the magnetic flux within the dispersed magnetic flux density outside the magnetic material and the magnetic flux density control plate; and

[36] a separate member, spaced at a predetermined interval between the first activation portion and the second activation portion,

[37] wherein a certain water passes through the casing, and is ion-activated with the far infrared and the magnetic force.

[38] There is provided the third aspect of an ionization device using magnetic force and far infrared, comprising:

[39] an activation member including a magnetic material disposed in the middle thereof, on the center of which magnets of a certain gauss is attached to distribute a magnetic force, a magnetic flux density control plate which covers upper and lower portions of magnetic material so as to distribute a magnetic flux density of the magnets through the magnetic material, a magnetic amplification member which is tightly winded with a plurality copper wires and disposed at the outer side of the magnetic flux density control plate, for amplifying the magnetic flux within the dispersed magnetic flux density, in which a fluid flux space is formed, and far infrared emission members and inductive conduction pieces, incorporated in the fluid flux space of the magnetic amplification member so that the far infrared is induced together with the amplified magnetic flux density in the magnetic flux within the fluid flux space of the magnetic amplification member; and

[40] cylindrical casings, in which a space where the activation member is incorporated is formed, and which are fixed each other with screw, including a plurality of throughholes through which a fluid passes,

[41] wherein a certain water passes through the cylindrical casings, and is ion-activated with the far infrared and the magnetic force.

[42] The magnetic material of a thin steel plate is cut out with a predetermined size, and at both surfaces of the center of which magnets of a minimum size are attached. The surfaces of the magnets are thickly coated with a diamagnetic material to weaken the strong magnetic force, and the surface of the steel plate close to the magnets are coated with a non-magnetic material to form a constant magnetic flux density with regard to the whole magnetic material, and thus the magnetic field of the weakened magnetic force is formed.

[43] The far infrared emission members mixes fine powder such as germanium, tormanium, quartz porphyry, jade, kaolin, ocher, quartz, charcoal, etc with an epoxy resin at a predetermined ratio of strength and quantity which is appropriate to the activation of the far infrared, to then solidify the mixture.

[44] The inductive conduction piece is composed of a thin plate of copper having purity of 99.99% at a certain size.

[45] The amplification member is disposed in the form of winded copper wires of high purity at the exterior where the magnetic material, far infrared emission members and inductive conduction pieces are arranged.

[46] An interruption plate is composed of a diamagnetic material in order not to be spreaded beyond the range on which the magnetic force affects.

[47] It is preferred that the inductive conduction pieces which activate the magnetic induction, in addition to emission of the far infrared at a predetermined amount, are placed in the fluid flow space of the ionization device using the magnetic force and far

infrared.

[48] The casing and lid have a plurality of throughholes through which a fluid passes. A cylindrical body having an outlet hose, disposed at the exterior of the ionization device, can be used for fluid activation.

Mode for the Invention

[49] Hereinbelow, preferred embodiments according to the present invention will be described with reference to the accompanying drawings.

[50] Example 1

[51] FIG. 1 is a perspective view of an ionization device using magnetic force and far infrared according to the first embodiment of the present invention, FIG. 2 is an exploded perspective view of the ionization device, FIG. 3 is an exploded perspective view showing a magnetic amplification member in FIG. 2, and FIG. 4 is a cross-sectional view of an ionization device using magnetic force and far infrared according to the first embodiment of the present invention.

[52] An ionization device 10 using magnetic force and far infrared includes a casing 11 in which a containing space is formed and a lid 12. The ionization device 10 includes a magnetic material 13, a magnetic flux density control plate 14, lateral, upper and lower magnetic amplification members 15 and 15a, far infrared emission members 16, and inductive conduction pieces 17.

[53] The magnetic material 13, on the center of which magnets 13a of a certain gauss are attached to distribute a magnetic force. The magnetic flux density control plate 14 composed of a diamagnetic material covers upper and lower portions of the magnetic material 13 so as to distribute a magnetic flux density of the magnets 13a through the magnetic material 13. The lateral, upper and lower magnetic amplification members 15 and 15a are tightly winded with a plurality copper wires, of which the lateral magnetic amplification member 15 is provided with a fluid flux space A therein, and the upper and lower magnetic amplification members 15a are disposed an outer sides of the magnetic flux density control plate 14. The far infrared emission members 16 is incorporated in the fluid flux space A so that the far infrared is induced together with the amplified magnetic flux density in the magnetic flux within the fluid flux space A of the magnetic amplification members 15 and 15a. The inductive conduction pieces 17, incorporated in the space A, induces the magnetic force in the magnetic flux within the space of the magnetic amplification members 15 and 15a and again amplifying the magnetic force.

[54] Various types of the magnetic amplification members 15 and 15a may be applied hereto, but it is preferred that a bundle of winded copper wires having predetermined thickness for preventing its movement, of which the lateral amplification member 15

has the fluid flux space A, and the upper and lower amplification members 15a in the form of a winded bundle are disposed at the outer sides of the magnetic flux density control plates 14 and 14a. It is preferred that the amplification members are in a state of impregnation in a storage battery.

[55] Also, one or two magnetic flux density control plate 14 may be formed to define the area where the magnetic field affects, but the embodiment of the present invention has two magnetic flux density control plates 14 and 14a. This construction needs to prevent mal-operation which may be caused when the magnetic force reaches other electronic devices, e.g., an electronic control unit (ECU) for an engine of an automobile, by limiting the magnetic flux density beyond a specific area.

[56] In the case that an ionization device of the present invention is applied to a power supplier in the mode of electrolyte such as a storage battery, stable power supply is obtained and the battery is maintained long in a use period.

[57] Example 2

[58] FIG. 5 is a perspective view of an ionization device using magnetic force and far infrared according to the second embodiment of the present invention, FIG. 6 is an exploded perspective view showing the ionization device, and FIG. 7 is a cross-sectional view showing an ionization device according to the second embodiment of the present invention.

[59] The second embodiment of the present invention will described with reference to the above accompanying drawings.

[60] A cylindrical casing 101 of the ionization device has circular opening ends extended therefrom, in which a fluid flux space A is formed. At the opening circular ends, upper and lower throughholes 102 and 104 through which the fluid flows are integrally formed, The first throughhole 102 is provided by a locking nut 103 with a packing member and is connected to a water tube.

[61] In the fluid flux space A of the casing 101, a first activation portion 110 and a second activation portion 130 are spaced at a predetermined distance from a separation member 120.

[62] The first activation member 110 comprises a magnetic material 13, a magnetic flux density control plate 14, lateral, upper and lower magnetic amplification members 15 and 15a, far infrared emission members 16 and inductive conduction pieces 17, as provided in the first embodiment of the present invention, and thus the construction and functions of the first embodiment are the same as those of the second embodiment which are denoted by the same reference numerals.

[63] The magnetic material 13 is provided to distribute a magnetic force, on the center of which magnets 13a of a certain gauss are disposed. The magnetic flux density control plate 14 composed of a diamagnetic material covers upper and lower portions of the

magnetic material 13 so as to distribute a magnetic flux density of the magnets 13a through the magnetic material 13. The lateral magnetic amplification member 15 is provided at the outer side of the magnetic flux density control plate 14, which is tightly winded with a plurality copper wires and includes a fluid flux space A therein. Upper and lower magnetic amplification member 15a are provided at the magnetic flux density control plate 14 up and down, which are tightly winded with a plurality copper wires so as to amplify and induce the magnetic flux of the magnetic flux density control plate 14 upward and downward. The far infrared emission members 16 and the inductive conduction pieces 17 which are incorporated in the fluid flux space A are provided to induce the far infrared, together with the amplified magnetic flux density in the magnetic flux within the fluid flux space A of the lateral magnetic amplification member 15.

[64] Also, the first activation portion 110 is provided with a plurality of amplification members 118 composed of a bundle of numbers of copper wires, which surrounds the exterior of the first activation portion 110.

[65] The second activation portion 130 comprises a magnetic material 132, a magnetic flux density control plate 136, and magnetic amplification members 134. The magnetic material 132 is in the form of folded multi-layers, on the center of which magnets 131 are attached. The magnetic flux density control plate 136 covers one side of the magnetic material 132. The magnetic amplification members 134 are tightly winded with a plurality copper wires at the outer side of the magnetic flux density control plate 136, and includes a predetermined space therein, so as to amplify the magnetic flux within the dispersed magnetic flux density.

[66] A separate member 120 is spaced at a predetermined distance between the first activation portion 110 and the second activation portion 130 to prevent overlapping of the amplified magnetic flux density.

[67] The ionization device according to the second embodiment of the present invention accelerates the ionization of water in the first activation portion 110 as that of the first embodiment, and thus ion-activated magnetization water is obtained. And, the magnetization water again passes through the second activation portion 130, to greatly enhance the activity of water.

[68] For reference, an inner wall of the casing 101 is composed of a diamagnetic material, and the inner wall of the casing 101 allows the magnetic flux density acting to the exterior of the ionization device to be reduced below one gauss, by magnetically interrupting the magnetic field of the magnetic material 132. It is preferred that a permanent magnet is made of neodymium. The neodymium magnet can be purchased at a low price, to provide the amplification effect of the magnetic flux density in the present invention.

[69] The magnetic flux density control plate 136 is composed of a diamagnetic material radiating an electromagnetic wave or a ceramic radiating far infrared. The magnetic force and far infrared simultaneously act on an active fluid to allow the activation action to be effectively exerted.

[70] The ion-activated magnetization water which is obtained by the ionization device according to the second embodiment of the present invention, further contains more healthful minerals than non-ionized water. Also, ion activation makes water molecule to be smaller. Therefore, in the case that the water is applied for use in drinking, the water heightens the absorption of minerals and can be in substitution for chemical substances such as sterilizing agent, disinfectant, cleaner, detergent, etc. Also, if the water is applied in various industrial fields, many polluted materials can be reduced as general ion water.

[71] The water is ionized with the magnetic field, and an electric test was made by Korea Research Institute of Standards and Science on October 10, 2000, of which the result is shown in table 1.

[72] Table 1

Sample	R(Resistance)	L(Quantity of electric induction)	C(Quantity of electricity)	D(Electric Dispersibility)
Before	2.33□	(0.50)	1.30□	1.936
After	0.4360□	(0.54)	6.10□	1.826
After 12 hours	0.2160□	(0.54)	11.30□	1.825

[73] The data shows the test result before and after ionization that quantity of electricity increases about 5~9 times and electric resistance is reduced to one-fifth~one-ninth. The ionization device employed the magnetic force only at that time when this test was taken.

[74] Also, water analysis before and after ionization was made by Research Institute of Public Health and Environment in Kyonggi-do on November 16, 2000, of which the result is shown in table 2.

[75] Table 2

Item	Before (Result I)	After (Result II)	
Degree of turbidity	0.54 NTU	0.76	+0.22 +40%
Nitrate nitrogen	2.7 mg/L	1.8	-0.9 -50%
Hydrogen ion concentration	7.0 mg/L	6.8	-0.2 -16%

Chlorine ion	8.0 mg/L	6.0	-2.0 -33%
Hardness	72 mg/L	60	-12 -20%
Secretion of-potassium per-manganate	0.5 mg/L	1.6	+1.1 +320%
Evaporation remnant	148 mg/L	107	-4 -38%
Zinc	0.144 mg/L	0.148	+0.004 +1%
General bacteria	410 CFU/ml	280	-130 -46%

[76] ※ The water before ionization was indicated as ground water I, and the water after ionization is indicated as ground water II.

[77] As shown in table 2, a good result of improvement of 30% in numerical values was obtained in degree of turbidity, nitrate nitrogen, chlorine ion, hardness, total residue on evaporation, general bacteria, etc.

[78] Example 3

[79] FIG. 8 is a perspective view showing an ionization device using magnetic force and far infrared according to the third embodiment of the present invention, FIG. 9 is an exploded perspective view of an ionization device according to the third embodiment of the present invention, FIG. 10 is a separated perspective view showing an amplification member applied to the third embodiment of the present invention, and FIG. 11 is a cross-sectional view of the third embodiment of the present invention.

[80] Referring to FIGs. 8 to 11, the ionization device 200 using magnetic force and far infrared comprises an activation member 210, and two cylindrical casings 220 and 222 including a plurality of throughholes 221 through which a fluid passes. The activation member 210 comprises a magnetic material 212, a magnetic flux density control plate 214, a magnetic amplification member 215, far infrared emission members 216, and inductive conduction pieces 217.

[81] The two cylindrical casings 220 and 222 in which a space is formed are fixed with screw. The magnetic material 212 is provided to distribute a magnetic force, on the center of which a magnet 213 of a certain gauss is disposed. The magnetic flux density control plate 214 covers upper and lower portions of the magnetic material 212 so as to distribute a magnetic flux density of the magnet 213 through the magnetic material 212. The magnetic amplification member 215 in which a fluid flux space is formed and which is tightly winded with a plurality copper wires, is disposed at the outer side of the magnetic flux density control plate 214, so as to amplify the magnetic flux density within the dispersed magnetic flux density. The far infrared emission members 216 and

the inductive conduction pieces 217 which are incorporated in the fluid flux space are provided to induce the far infrared, together with the magnetic flux density amplified in the magnetic flux within the fluid flux space of the amplification member 215.

[82] Inner walls of the casings 220 and 222 allow the magnetic field of the magnetic material to be magnetically interrupted, and thus the magnetic flux density acting on the exterior of the magnetic amplification member 215 can be reduced below 5 gauss.

[83] The third embodiment further includes an outlet hose 230 for injecting the a fluid fuel into a fuel intake of vehicles.

[84] Such efficiency of fuel activation device has been already known in the magnetic flux density amplification devices as mentioned above, and the present invention is aimed to provide an improved ionization device of amplifying the magnetic flux density. The separation of ion in the liquid fuel can enhance the activation and combustion efficiency of the fuel.

Industrial Applicability

[85] As described above, in the case that the water obtained by the ionization device of the present invention is applied for use in drinking, the water heightens the absorption of minerals and can be in substitution for chemical substances such as sterilizing agent, disinfectant, cleaner, detergent, etc. Also, if the water is applied in various industrial fields, many polluted materials can be reduced as general ion water.